4 BASELINE PERFORMANCE ANALYSIS

Baseline performance analysis is fundamental for determining how the contractor is performing against the baseline. This section describes the processes for assessing and reporting progress, including various analyses, reporting requirements, and reviews. Requirements from applicable DOE Orders and other DOE HQ guidance, such as IPABS reporting, have also been incorporated into this manual. Contractors should use this guidance as a basis for preparing their internal baseline analysis and reporting procedures.

4.1 PERFORMANCE MEASURES

Recent DOE guidance such as the EM FY1996 Performance Plan (DOE, 1996b) issued in response to the GPRA of 1993 provides the nucleus for progress measures of planned performance that will satisfy congressional, Office of Management and Budget (OMB), and DOE HQ needs. LCAM GPG 06, Performance Analysis and Reporting Guide, provides alternatives the DOE Program Manager may use in reviewing the progress of planned performance. The ERD project performance measures are used to:

1. Provide a uniform process and standard for performance reporting that use the principles of management by exception.

2. Ensure integration of ERD-, AO-, and contractor-level reporting requirements.

3. Provide accurate, timely, and complete reporting of information, including variance analyses and corrective actions to appropriate levels of management, both internal and external to the project.

4. Implement and maintain self-assessment activities at the ERD-, AO-, and contractor-levels that facilitate continuous reporting process improvement.

The ER project baseline must contain all the schedule and resource elements required to accomplish the work scope associated with the performance measures, other HQ milestones, and regulatory requirements. The contractor's progress reporting and analysis procedures should include the following requirements:

1. A risk-based graded approach should be used to determine whether the most cost-effective measurement of progress is being applied to the remaining work. The contractors should use measures and controls appropriate to the degree of risk. Contractors are encouraged to refer to the LCAM GPG 06, which contains examples for measuring and reporting progress (DOE, 1996c). If a contractor determines that one or more of the reports shown in LCAM GPG 06 is more suitable, the contractor should notify the AO and ERD of its proposal to change reporting elements and how they will provide the required visibility while reducing costs.

2. A process must be described and implemented to verify the accuracy and consistency of work completion status and schedule accomplishment. Performance data must correspond exactly to the accounting month for which the contractor is reporting.

4.2 STATUS REPORTING

The LCAM and accompanying Good Practice Guides (GPG) provide the framework for reporting and analysis using a risk-based, graded approach (DOE Order 430.1). The graded approach is already in effect at ER installations. Contractors, AOs, and ERD program engineers are encouraged to use the GPG to select appropriate reporting documents and frequencies as risk levels change and the project matures.

ERD Projects are required to status and report all baselined activities to DOE on a regular basis. Contractors are also required to report status against all other appropriate milestones or performance measures, as described in Section 2.3. ERD is using the IPABS-IS, specifically the Program Execution Module (PEM), as its official ER reporting system to HQ. The PEM reports status at the PBS level on planned cost, schedule, milestones, and performance measures. ERD requires reports at the WBS level in the form of the Monthly Status Report (MSR) for each of the first two months of each quarter and the Baseline Performance Report (BPR), for the last month of each quarter. The Office of Environmental Operations and Services (OEOS) performs a Quarterly Management Review (QMR) to which contractors, AOs, and ERD provide input. The PEM, MSR, BPR, and QMR are described in more detail later in this section.

ERD may modify reporting requirements if current reports and reporting levels do not provide sufficient detail to adequately explain cost and schedule variances, corrective actions, or other necessary data. Each contractor normally prepares and maintains a reporting and analysis procedure for AO and ERD review, comment, and concurrence. At a minimum, these procedures must be consistent with this maual and should reflect all unique contractor-specific conditions. Contractor reporting procedures also should address the following:

1. The required reports' content, format, frequency, and timing.
2. Performance measurement planning and statusing.
3. Actual cost accumulation (see Section 4.2.1).
4. Change control.
5. Funds management reporting.
6. IPABS-IS reporting.
7. Quality Assurance (see Section 4.2.2).

The contractors shall provide project performance data on a monthly and quarterly basis, as described below, to the AO, ERD, and OEOS. As each project matures or changes, ERD and AOs will use a graded approach to modify reporting requirements commensurate with the risk level of the remaining effort to be completed. Sites with a lower risk level will be notified in writing if their reporting requirements differ.

4.2.1 Actual Cost Accumulation

To ensure accurate cost reporting consistent with internal cost reporting systems, the ACWP reported on the contractor CPR should be identical to the costs reported for that month in DOE's Management Analysis Reporting System (MARS). The MARS is the official DOE system for funds and cost statusing. Actual costs from MARS are automatically downloaded as ACWP each month into IPABS-IS. The contractors must use a reconciliation process to ensure ACWP reporting and cost invoicing are synchronized. Where actual costs reported and actual costs invoiced are different due to timing of the report and invoice cycles, the next reporting cycle should be adjusted to reflect accrued costs for that period. The contractor should have an accrual process in place. Accrued costs must be entered into the MARS in order to be used in the PCS reports. All exceptions must be explained in the MSR and BPR.

4.2.2 Quality Assurance (QA)

Development, implementation, and adherence to a reporting QA process is a necessary part of the reporting process. Each contractor's reporting procedure should describe the process that will be used to ensure the quality of the reporting product. This process normally includes the following:

1. Development and use of an internal plan or schedule that describes the key steps and responsibilities for producing timely reports.

2. Development and use of a monthly and a quarterly reporting checklist to ensure that appropriate quality checks are performed.

3. The BPR or MSP signature page. This page certifies that the contractor Project Control Manager, contractor ER Project Manager, and the DOE AO Project Manager have addressed the comments and concerns raised by the AO Review Team or ERD oversight review. If all AO/ERD comments have not been addressed, an explanation must be provided.

4. Reconciliation of the CPR and Cost Plan BAC at the contractor level versus the budget authority. Discrepancies identified as a result of this reconciliation must be explained in the BPR, MSR, and PEM.

4.2.3 Baseline Performance Report (BPR)

The BPR is the most comprehensive of the reports required from the contractors. It is submitted quarterly by each contractor to the AO as both a paper copy report and an electronic report. The BPR is due to ERD no later than the 20th calendar day of the month following the end of the fiscal quarter. If the 20th falls on a Saturday or Sunday, it is due on the following Monday. Attachment 3 contains an example of a completed BPR. Major report components and brief instructions for the components follow:

1. ***Signature Page:*** Review and signature sign-off signifying the report has been reviewed. The report is signed by the contractor Project Control Manager, the DOE AO ER Program Manager, and the contractor Project Manager.

2. ***Executive Summary:***

   - Narrative and Table of Variances: The narrative section addresses the current period, cumulative-to-date, and at-completion contractor variances (cost and schedule) as a whole. It discusses the causes, impacts, and corrective actions for the variances. If a specific task contributes to the majority of the contractor variance, the task will be specifically listed. Otherwise, the narrative will be kept somewhat general. Additionally, the narrative will provide a brief focus on the changes in the variances from the previous month or quarter, and the factors influencing the data.

   - Potential Impacts Table: This table identifies the risk to the project. If any questions are answered "Yes," an explanation must be included within the table. The explanation should include the reason for the anticipated risk, the impact, and all corrective actions currently being taken.

3. ***CPR:*** A report of BCWS, BCWP, and ACWP; budget at completion (BAC); and EAC, with related variances. Produced, at a minimum, at WBS Level 5 or at a lower level mutually agreed to between the contractor and ERD program engineer/manager.

4. ***Cost Plan:*** The Cost Plan reports baseline dollars for each WBS at the subproject level, time-phased for the current fiscal year, upcoming budget year, and the 5-year planning window. It is produced, at a minimum, at WBS Level 5 or at a lower level mutually agreed to between the contractor and ERD program engineer/manager. The Cost Plan reflects estimates of when dollars will be invoiced or accrued for each WBS at the subproject level, time-phased for the current fiscal year, upcoming budget year, and the 5-year planning window. The sum of all historical data, up through and including the current month data, should match the project's ACWP total reported in MARS and IPABS-IS.

5. ***Milestone Exception Report:*** This report is intended to show Levels 0, 1, 2, and 3 milestones that are overdue plus all Levels 0, 1, and 2 milestones that have baseline date or a forecast date within six months of the report date. Milestones new to this report and milestones that have been modified since the previous report should be highlighted. Milestones that are classified as Budget or Management Commitment Milestones in IPABS-IS should be labeled for easy identification.

6. ***Contingency Log:*** This log is intended to provide an updated contingency balance. This balance will change and be updated as BCPs are processed and approved.

7. ***Cost Performance Curves:*** Curves depicting the cumulative to date BCWS, BCWP, and ACWP. The performance curves should depict a window of activity 6 months past and forward.

8. ***Baseline Change Activity Log:*** Provides a list and status of all (internal and external) submitted BCPs.

9. ***Performance Measures Summary Table*** (see Table 4.1 which includes a quantitative status of performance measures required of the contractors).

4.2.4 Monthly Status Report (MSR)

The MSR is submitted monthly by the contractors except for months that end in a fiscal quarter, in which case, a BPR is submitted. The MSR is an abbreviated version of the BPR. It contains the Signature Page, the Cost Plan, the CPR (including the cost and schedule variance analyses), the Performance Curves, and the Milestone Exception Report. The MSR is due no later than the 20th calendar day of the month following the end of a month that does not correspond to the end of a fiscal quarter.

Table 4.1 Performance Measures Summary Table Example

Performance Indicator Description	Reference Requirement Document	Prior Years Cum.	Fiscal Year 2000										Project To Date Cum.
			1st Qtr		2nd Qtr		3rd Qtr		4th Qtr		FY Total		
			Plan	Actual	Plan	Actual	Plan	Actual	Plan	Actual	Plan	YTD	
Completed Assessments of Release Sites (PRSs)	IPABS	**1,451**	0	0	0	0	0	0	10	0	10	**0**	**1,451**
Completed Release Sites - New NFAs submitted to AA	FOCUS 2006 Part XI.b & Appendix F Part A.1.1	**1,414**	0	0	0	0	1	3	1	0	2	**3**	**1,417**
Reworked NFAs submitted to AA for prior years	Approval Authority	**590**	0	0	0	0	0	0	0	0	0	**0**	**590**
NFAs Approved	DOE (RAD only)	**521**	0	0	0	0	10	0	10	0	20	**0**	**521**
	Approval Authority	**102**	0	0	80	0	10	107	10	0	100	**107**	**209**
	Other/Transferred	**0**	0	0	0	0	0	0	0	0	0	**0**	**0**
D & D Structures Completed	IPABS	**41**	0	0	0	0	0	0	0	0	0	**0**	**41**

4.2.5 IPABS-IS PEM

The IPABS-IS PEM requires monthly, quarterly, and semi-annually updates. The IPABS-IS guidance and manual should be referenced for the most current and complete information on the PEM's content, format, due dates, and completion instructions. The IPABS-IS manual is found at the IPABS-IS website, https://ipabs-is.em.doe.gov/ipabs/, under the Reporting Module link. The Operations Office Administrator can arrange for an IPABS-IS log-in identification and password. A complete PEM deliverable schedule is located at ipabs-is.em.doe.gov/ipabs/help/pem.

PEM monthly requirements include the following information collected at the PBS level:

1. Adjusted BCWS.

2. A short narrative explanation of any difference between the adjusted BCWS and the original BCWS that was input at the start of the fiscal year. (Currently, IPABS-IS also requires monthly status on DNFSB Milestones. However, ERD does not have DNFSB Milestones.)

PEM quarterly requirements include the monthly requirements above plus the following collected at the PBS level:

1. Input of BCWP for the quarter by month.

2. Quarterly cost and schedule variance narrative for all PBS cost variances (CVs) and schedule variances (SVs) that exceed the current thresholds of 10% or one million dollars.

3. Milestones status and variance narrative for all HQ milestones with a SV over 30 days.

4. Projected carryover and project unobligated funding at fiscal year end.

5. Narrative on any Operations/Field Office and Headquarters Program level issues to support the QMR.

6. Release site and facility assessment and completion status.

PEM semi-annual requirements include the quarterly requirements above, plus the following collected at the PBS level:

1. Corporate performance measure actuals for transuranic waste (TRU), mixed low-level waste (MLLW), low-level waste (LLW), hazardous waste, remediation waste, nuclear materials, and technology deployments (at the AL Operations Office level).

4.2.6 Quarterly Project Review (QPR)

The QPR is planned and conducted by ERD for EM-30. ERD provides written guidance to the contractors and AOs on content, format, and timing. The QPR provides a vehicle for interactive communication between ERD, AOs, and contractors to cover performance status, ongoing action items, and risk and contingency issues. EM Headquarters utilizes this to prepare their Monthly Management Report (MMR).

4.2.7 Quarterly Management Review (QMR)

The QMR is planned and conducted by the OEOS Program Management and Analysis Team (PMAT). PMAT provides written guidance, normally through electronic mail, on content, format, and timing for the QMR. ERD and AOs will create the project review material by synthesizing material from the MSRs, BPRs, QPRs, and numerous other sources.

4.3 VARIANCE ANALYSIS AND REPORTING

The baseline is the basis upon which project performance is analyzed. A thorough analysis can provide the project management staff with (1) a consistent assessment of work accomplished; (2) information to derive corrective actions when significant baseline variances, or deviations, develop; and (3) the tools for forecasting future trends. The analysis requires periodic aggregation of the actual costs, schedule status, and technical progress against the performance measurement baseline (PMB). Corrective action planning requires a keen understanding of the data elements, variances, and what it will take to get the work element back on track. Utilizing the analysis results and identified corrective actions will enable the project management staff to more efficiently forecast future trends.

4.3.1 Variance Analysis

The process of accumulating and comparing performance measurement data results in the identification of variances of both a favorable and an unfavorable nature. Analyses of these variances are fundamental components of performance measurement. The foundation of the performance measurement system are the planned cost (budgeted cost of work scheduled, BCWS); actual cost of work performed (ACWP); and earned value, or budgeted cost of work performed (BCWP). When BCWP is compared to ACWP, the resulting cost variance indicates whether the completed work has cost more or less than what was budgeted. A comparison of earned value and the BCWS indicates whether more or less work was completed than was scheduled. Other variances and performance indices are calculated from BCWS, BCWP, and ACWP to provide contractors and DOE personnel data to identify problems, determine reasons for plan deviations, formulate corrective action plans, and report the results, based on performance to date and estimates of future conditions.

The establishment of variance criteria enables management to focus attention and resources on the significant variances. Contractor project managers should ensure that thorough performance analyses occur and include identification of:

- Variance causes
- Cost, schedule, and regulatory project impacts
- Recovery prognosis
- Planned corrective actions
- Trending analyses

4.3.2 Variance Analysis Process

Variance analysis reporting begins with accurately collecting costs (ACWP), evaluating the amount of work accomplished (BCWP) against the planned budget (BCWS), and statusing the

project schedule. Variances are reported in dollars (over or under budget and behind or ahead of schedule), as well as, in days (ahead or behind schedule). Dollarized cost and schedule variances are derived by comparing ACWP, BCWS, and BCWP. Variances in days are derived by evaluating the project schedule status. ACWP, BCWS, and BCWP also produce other performance indices by which the project can be measured. BCWP, or earned value, must be measured using the earned value techniques established during control account package development. Results of monthly statusing are incorporated into management reports (see Section 4.2) for review and analysis of cost and schedule performance and to implement corrective actions.

Variances are evaluated at the cost account level and are summarized up through the WBS. Variances exceeding predetermined internal thresholds, or variance thresholds, that support reporting level thresholds are analyzed and incorporated in a variance analysis table, as included in the MSR and BPR. Figure 4.1 depicts performance measurement parameters.

The variance analysis is the heart of the status reporting process. A contractor must generate a variance analysis when a variance threshold is exceeded. As mentioned earlier in this section, ERD establishes variance thresholds for determining and reporting significant exceptions to cost and schedule baselines. These variance thresholds should be more stringent than the ERD thresholds. The specific values and procedures for their use should be described in the contractor's reporting procedure. ERD reporting thresholds may be adjusted based on project performance for each contractor and are issued periodically to the contractors. Variance thresholds are established by ERD for selected variance categories at different levels of the ER Project WBS. See Appendix F for current variance thresholds for baseline change proposals (BCPs) and DOE required Status Reports. Variances that exceed these thresholds are considered significant and require variance analysis and appropriate corrective action.

4.3.3 Performance Measurement Elements, Variances, and Indices

Below is a list of data elements, variances, and indices contained in the monthly and quarterly reports. They may be calculated for all WBS levels on both a current and cumulative to date basis. All items in the list, with the exception of "variance in days," are in terms of dollars. Some of these items have been defined in Sections 3 and 4; all are defined in Appendix B, Glossary.

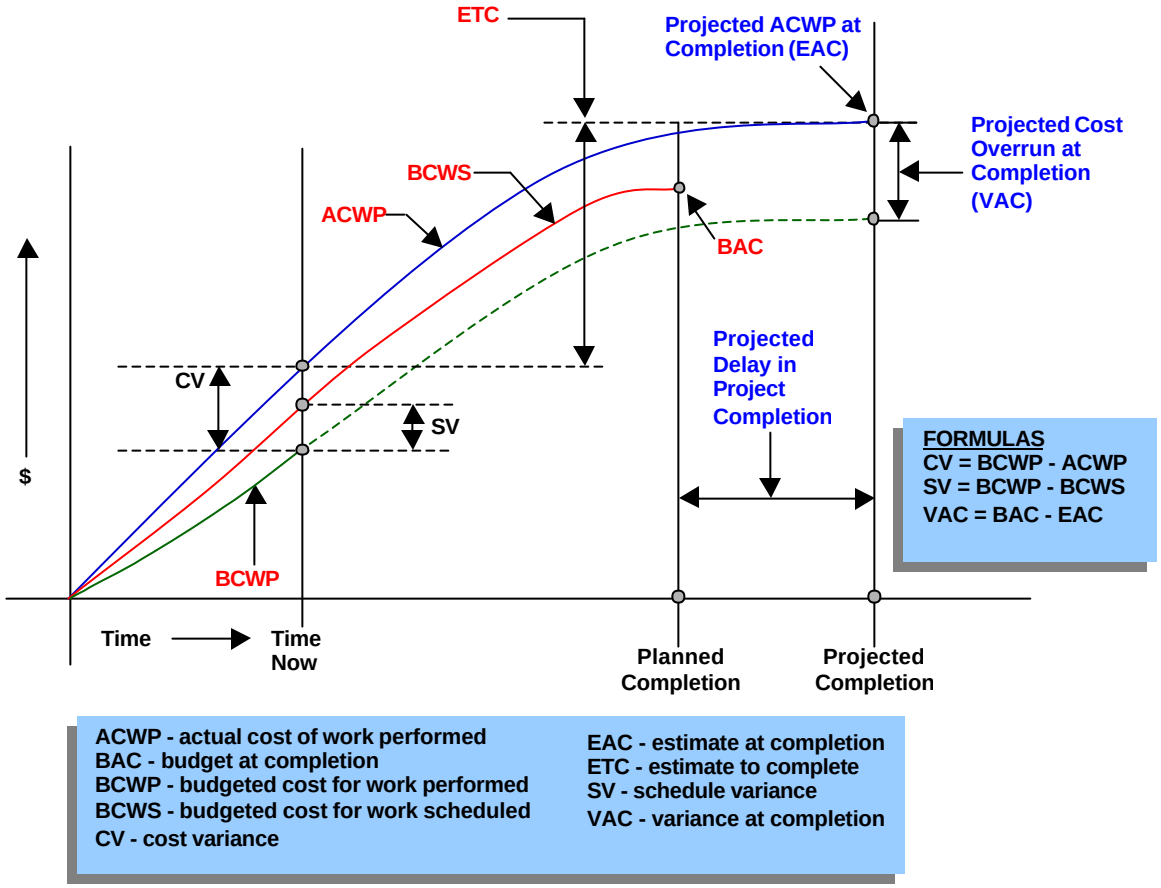
1. Data Elements:

    - Planned value (BCWS).
    - Earned value (BCWP)
    - Actual costs (ACWP)
    - Budget at Completion (BAC) (sum of BCWS)
    - EAC (ACWP plus ETC). (see Section 3.2.3.4)

2. Variances:
    - Schedule variance (SV) (BCWP - BCWS). (see Section 4.3.1).
    - Schedule variance in days (project schedule)
    - Cost variance (CV) (BCWP-ACWP). (see Section 4.3.2).
    - Variance at Completion (VAC) (BAC - EAC)
    - Spend variance (BCWS-ACWP)
3. Performance indices:
    - Cost Performance Index (CPI)
    - Schedule Performance Index (SPI)
    - To-Complete Performance Index (TCPI)

As described in Section 3.2.3.4, an EAC is generated and compared to the BAC. The difference between the BAC and the EAC is the at completion variance (ACV), which represents an estimated overrun or underrun to the PMB. This variance is subject to analysis, and as appropriate, corrective action.

Figure 4.1 Performance Measurement Parameters



ERD uses narrative sections within the PEM to provide necessary variance analysis reporting at the PBS level. This narrative section contains seven sections that report status, variances, and corrective actions. A contractor summary of the variances may be explained in the executive summary of the BPR. Schedule and cost variances are presented in more detail below:

4.3.3.1 Schedule Variance (Time or Dollars)

Schedule variances can be expressed in terms of time or dollars, depending on whether the planning and forecast schedules are compared or whether BCWS and BCWP are compared. When the schedule variance is expressed in terms of time, the project management and project control staff evaluate the reported schedule variance in relation to the status reflected in the project schedule. This evaluation quantifies the extent of the schedule deviation, analyzes the schedule deviation in relation to the critical path, and determines whether variance analysis is warranted. When the schedule variance is expressed in terms of dollars, it is referred to as the SV and is defined as BCWP less BCWS. If reporting thresholds are exceeded for either time or dollarized schedule variances, the variance analysis must include the following:

1. Cause for the variance. Examples of causes include insufficient resources, delays from vendors, rework, unforeseen complexities, tooling problems, or increased/reduced productivity/efficiency of labor resources. The causes are defined in such a manner as to identify the problems for corrective action planning.

2. Impact. The impact that a schedule slippage will have on other tasks within the project is addressed. Project schedules are statused to reflect the schedule slippage and, as required, baselines may be revised. Potential cost escalation resulting from the slippage is determined, and EACs may be revised. Any current or potential problem areas are addressed for possible corrective action by the responsible manager.

3. Corrective Action. After the cause and impact have been determined, corrective action plans are formulated to mitigate any unfavorable results of the variance. These plans are reviewed and approved by the responsible manager. The plans include a detailed explanation of the corrective action, how the action is expected to impact the variance, and a time frame in which the action will be effected. These corrective action plans also address required interfaces with other organizations.

4.3.3.2 Cost Variance

The CV is defined as BCWP less ACWP and is expressed in hours or dollars and by element of cost. A CV that requires analysis is addressed in the following terms:

1. Cause. Specific reasons why the variance occurred are explained. Each cost element is reviewed for potential contribution to the overall variance. Some of the causes of the variance may not be within the control of team leaders or functional managers, e.g., allocable costs. Contributors to a CV may include labor rate differences, manpower levels, attrition, or material price.

2. Impact. The impact to the EAC is identified by cost element. The cost performance index (CPI) may be used to statistically determine a revised EAC, but this result does not alleviate the requirement to perform an independent assessment of all the remaining effort.

3. Corrective Action Plan. When a CV meets the variance analysis criteria, work-around or corrective action plans are developed that aim at achieving the approved budget. This may involve reallocation of resources or developing another approach. The corrective action plan is reviewed and approved by the responsible manager. The plan contains a detailed explanation of what corrective action is being or will be taken, how the action is expected to impact the CV, how the corrective action will be implemented, and when it will become effective.

4.4 RISK EVALUATION AND MITIGATION

Complex ER projects require an integrated risk evaluation and mitigation process, which provides a formal mechanism for assessing project risk, budgeting for high probability risks, and developing mitigation strategies or plans. Each contractor must consider the time and resources expended analyzing risks and developing risk mitigation strategies from a cost-benefit basis. "Managing or mitigating a risk should cost far less than realizing the risk itself would cost" (ref. LCAM GPG-07).

4.4.1 Risk Evaluation Phase

During the risk evaluation phase, project risks are identified, analyzed, and prioritized according to projected impacts to the baseline, as documented in such baseline documents as the Programmatic Assumptions Document (PAD) and the remediation workplans.

1. ***Assumptions:*** The PAD includes all significant programmatic assumptions that form the basis for detailed project planning and cost estimating. The uncertainty of the baseline estimate can range from the probable (most likely), to the possible (likely), to the improbable (unlikely or worst case). ERD requires that each project baseline cost estimate reflect the probable or "most likely" case and is accurate within plus or minus 15 percent. Some high probability risks may need to be included as contingency while other low probability ("worst-case") risks should not be included in the baseline. These low probability risks may have large cost consequences and must be identified in the IPABS-IS and/or the PtC.

2. ***Evaluation and Analysis:*** As discussed in Section 3, uncertainties derived from the risk evaluation process are broken down into two basic categories: contingency and programmatic risk. The differences between the two relate to the level of project definition. Contingency deals with in-scope work having a high level of project definition. It is designed to cover the normal errors associated with baseline cost estimates. Programmatic risk covers in-scope work having a medium level of project definition, as well as, out-of-scope work with low levels of project definition. The results of the analysis shall present the current ETC, quantify the risk, and assign the confidence level associated with completing the project with the stated contingency amount.

3. ***Prioritization:*** A prioritized list of each subproject and/or major activity must be prepared following the risk evaluation and analysis. This list must rank these activities in descending numerical order, with the most important at the top. Once the prioritization list has been developed and approved by the project manager it becomes a fundamental tool in baseline planning and budgeting. Also, ERD will combine these individual prioritization lists into an Integrated Prioritization List (IPL) for use in making funding decisions. The contractors should consider the usefulness of this process for both establishing a framework for all identified project risks and supporting their budget requests to ERD and HQ.

4.4.2 Risk Mitigation Phase

During the risk mitigation phase, mitigation strategies are developed for the highest priority risks, and actions, time frames, and responsible parties are documented in a risk mitigation plan.

1. ***Risk Mitigation Plan (RMP):*** The RMP defines the scope and process for identification, evaluation of impact and management of risk applicable to the project. The purpose of the RMP is to assure that project management incorporates appropriate, efficient, and cost-effective measures to mitigate unacceptable project-related risks. It should establish the concept and define the process for risk management of the project. It should describe the roles and responsibilities of project personnel in performing the risk management functions and defines reporting and tracking requirements for risk-related information. The product of this risk analysis will be a risk analysis report listing the various risks with their classification, mitigation and handling strategies, impact on cost and schedule, and projection action item. The risk management process will:

a. identify potential sources of risk and the mechanisms forming the risk

b. assess individual risk and their impact on project and facility performance, cost, and schedule;

c. evaluate alternate approaches to mitigate high and moderate risk;

d. develop action plans to handle (i.e., avoid, reduce, transfer, or accept) individual risk;

e. interface risks with other projects, as appropriate

   The amount of detail in the RMP should be proportionate to the potential consequences of the project's risks and the resources available to implement mitigation strategies. The RMP must be included in the baseline documentation and made available to ERD for review and dissemination to other key project stakeholders.

2. ***Implementation:*** After a RMP is prepared, the Project Manager is responsible for implementing the RMP and for meeting with the management team to reassess the current risks and strategies since these will change as the project matures. The frequency of reevaluation should correspond to the dynamics of change and uncertainty affecting the project. The RMP should be revised to reflect new information and included in the baseline backup documentation.

For a more detailed discussion on the RMP plus examples see Section 8 of the DOE Order 413.3 Practices document.

4.5 REVIEWS

The ER project baseline performance is reviewed monthly, quarterly, semi-annually, and annually to ensure cost and schedule variances are within acceptable limits and to ensure DOE management that all technical, schedule, and fiscal commitments are being met. Each of these reviews has specific criteria and satisfies several different DOE and stakeholder objectives. There are several major types of reviews routinely conducted by ERD. The type, timing, frequency, and level of detail associated with a particular review type are based upon the project phase, size, complexity, and identified risks. A risk-based graded approach should generally be applied in determining the quantity and level of detail to review. Reviews tend to be more rigorous and formalized on larger more complicated projects than on smaller projects. However, many universally applied checks must be performed to achieve successful project completion based on a graded approach considering project size, complexity, and other specifics. Potentially costly areas, or areas on which problems seem to be developing, require greater scrutiny. Simpler areas that offer low project risk impact should necessarily receive less scrutiny than high-risk areas. The following list captures the major reviews ERD conducts:

4.5.1 Monthly

ERD reviews the MSR cost data and performs a detailed analysis of all major cost elements and performance measures. ERD organizes the cost data by major cost element and develops graphics to highlight historical performance, cost trending, and activity comparisons at WBS Level 5. Input from the MSR (and BPR), key issues, concerns, impacts to funds, and status of HQ milestones are reviewed and summarized for inclusion in the ERD Quarterly Report. This data then feeds the QMR, which is presented to HQ via video conferencing.

4.5.2 Quarterly

The contractors submit their BPRs to the AO, who forwards them to ERD. The AOs perform a detailed review of the reports and provide feedback to the contractors. ERD produces summarized management reports for submission to the OEOS, HQ, and for internal use. The AO Project Control Specialist distributes reports to the AO support staff. The AO Review Team tracks the date of each submittal and monitors the process after receipt. The AO evaluation verifies data accuracy and completeness. The AO ensures that the contractor narratives are consistent with the data and accurately reflect contractor progress. Data in the PEM and BPR are compared to ensure consistency. After the initial evaluations, AO comments are provided to the contractors so they may improve the quality of their reports, as necessary.

4.5.3 Annual and Semi-Annual Project Reviews

The DOE conducts midyear and year end project reviews of all ER projects, usually during May or June and again in November or December of each fiscal year. A project review is intended to provide knowledge to the DOE for making necessary decisions and demonstrate and confirm project accomplishments at various stages in its life cycle and its ultimate success through achievement of the following review objectives:

- Ensure readiness to proceed to subsequent project phase(s).
- Ensure orderly and mutually supportive progress of various project efforts.
- Confirm functional integration of project products and efforts of organizational components.
- Enable identification and resolution of issues at the earliest time, lowest level, and lowest cost.
- Support event-based decisions.
- Identify risks.

Project reviews can be performed on a checklist or professional peer review basis. The checklist basis tends to be more objective, and the peer review tends to be more subjective and qualitative in nature. Project reviews can be categorized into two major types, technical reviews and decision point reviews. Technical reviews are often necessary for determining whether complex issues have been satisfactorily resolved, determining whether or not such issues exist, and assisting in resolution of such issues. Decision point reviews are performed to verify that sufficient progress has been achieved, level of information has been developed, and requirements have been satisfied to effectively initiate performance of subsequent activities. See LCAM GPG 15, Project Reviews, for a more detail description of Project Reviews.

4.5.4 Annual Baseline Review

Baseline reviews may be conducted annually to review the baseline integrity. ERD may review the baseline to ensure, for example, that risks are properly addressed; risk management and mitigations are conducted; estimates are sound and based upon current rates; project control procedures are being followed; and the schedule includes the proper level of detail and relationships. A baseline review team will consist of key personnel from the AO and the ERD. The ERD Baseline Review comments and Findings Form is included as Attachment 7.

4.5.5 Baseline Validation

Baseline validations are conducted at the start of a project to establish the project's lifecycle baseline. A project can receive subsequent baseline validations, within strict ERD limitations, when significant changes to the baseline are necessary due to technical redirection, addition of new scope, large shifts in available funds, or other situations sanctioned by ERD. A baseline validation team will be selected as prescribed in the IPABS Handbook.

4.5.5.1 Required Baseline Validation Documentation

Much of the contractor required documentation during a baseline validation is the same as that required of them for preparing a new baseline (Section 3.0), maintaining a baseline (Section 5.0), or for a baseline review or validation (Section 4.0). A BCP is not required for an initial baseline

but is required for baseline changes to succinctly describe the changes which occurred since the last BCP, why the changes were made, and the major effects of these changes (see Section 5.2.5.1). The documentation presented to a baseline validation review team should (1) include the following items and (2) be a stand-alone package, permitting an independent team to assess the adequacy of the scope, cost, and schedule, without needing to request additional information during the review. Lack of required documentation during the review could result in the inability of the review team to prepare an independent cost estimate or to validate the baseline, even if the missing information is available upon request.

1. ***Baseline Change Proposal (See Section 5.2.5.1)***
2. ***Contractor completed questionnaire (See Section 3.3)***
3. ***Work Breakdown Structure (WBS) Dictionary (See Section 3.1)***
4. ***Program Assumptions Document (PAD) (See Section 3.3)***
5. ***Project Execution Plan (PEP) (See Section 3.3)***
6. ***Task Scope Descriptions (TSDs) (See Section 3.2.1)***
7. ***Priority List (See Sections 3.3 and 6.1.3)***
8. ***Site Closure List (See Section 3.3)***
9. ***Project Schedule (See Sections 3.2.2 and 3.3)***
10. ***Cost Plans (See Section 3.2.3.3)***
11. ***Risk Management Plan (RMP) (See Section 4.4.2)***
12. ***Community Relations documentation or Stakeholder Involvement Plan (See Section 3.3)***
13. ***Closure Strategy (See Section 3.3)***
14. ***Contingency Analysis (See Section 3.2.3.5)***
15. ***Project Control System Description (PCSD) (See Section 3.3)***
16. ***Overhead Rates (See Section 3.2.3.3)***
17. ***Escalation factors (See Section 3.3)***